1   Thank you.

2   MR. KNAPP: Bob?

3   MR. GERSE: Hi. Bob Gerse with APCO. I

4   know this is a technical panel, and let's make an

5   assumption that all the sharing, priority access

6   capabilities that you talked about are there and to

7   address Robert's point are proven to be operational.

8   I guess a concern that still is there is, if I'm a

9   carrier, even though I may get compensated on some

10   sort of a best customer basis, why would I want a

11   situation where I have to on a moment's notice give up

12   access, give up capacity on my network, for public

13   safety?

14   And assume also that if you give these toys,

15   these devices to public safety, they will use them and

16   they will use them a lot, and it's not going to just

17   be a 9/11 situation where capacity gets eaten up, it's

18   going to be every time there is a significant fire,

19   every time there is a snow storm in D.C., every time

20   there's some major event, there is going to be a

21   tremendous spectrum demand, and let's assume you only

22   have ten, that's going to go beyond that. So I guess

23   it's more of a regulatory question, but how do we make

24   sure that the access that's technically available is

25   in fact available?

1   MR. KNAPP: Anybody want to take that one?

2   Stagg?

3   MR. NEWMAN: I would address that in a

4   couple ways. Obviously we have to get out there and

5   get experience with what demand will really be. I

6   think we start off the next, the first few years, in a

7   good situation in the sense that if you look at the

8   commercial operators today, say Verizon, they've got

9   close to 100 million customers I think after the

10   merger, they're over 90 million. And they have

11   typically 80 to 100 MHZ per market. So they've got

12   about 1 Hz per user of capacity.

13   Public safety starts out with 3 million

14   users eligible but effectively probably more like 1

15   million users, because the volunteer fire departments,

16 ′ with 10 MHZ. So they're starting out at 10 Hz per

17   user, so a lot more user on their core network before

18   they go into the priority. Now, they are going to

19   have incidents where it's much more focused in

20   particular sectors, and so we have to develop the

21   business arrangements that go with the technology

22   arrangements.

23   I mean when the police and fire, you know,

24   are at a scene, we accept we can't use those roads

25   during that moment, right, and you know, the roads get

1   blocked. So I think we have to work out the business

2   arrangements, and just like commercial operators have

3   to support 911. Now, I don't know the whole history

4   of how that deal was done, actually probably dates

5   back to when there was one Bell system it was a lot

6   easier than dealing with lots of commercial operators.

7   But I think technically we've got some head

8   room. And the Chairman said in his speech that as we

9   free up more spectrum, public safety will get more of

10   that. So I think we have a path forward, but I think

11   one of the speakers, it might have been Patrick, made

12   a very good point, we've got to get out there, you

13   know, get experience, the FCC has got to use their

14   leverage to make sure public safety needs are met, and

15   come up with a working solution. Dale?

16   MR. HATFIELD: Well I was just going to add

17   that we talked a moment ago, emphasized a moment ago,

18   about the additional cell sites being able to help

19   solve the coverage problem, but I agree with Bob,

20   there's going to be lots of these applications that

21   are going to keep pushing demand for spectrum. And I

22   think ultimately a lot of that solution has to be in

23   frequency reuse and smaller cell sites. So while we

24   emphasize the coverage aspects of it, I think long

25   term it has to be also aimed at increasing capacity

1   dramatically.

2   MR. KNAPP: Thank you. Harlin?

3   MALE SPEAKER: I'm here speaking on behalf

4   of the Police Chiefs Association and the Public Safety

5   Spectrum Trust, and a couple of things I want to

6   comment on and hopefully draw some response. First of

7   all, we start with almost the end of the panel when

8   Dale talked about the sharing aspect. And we have

9   always assumed that in one way or another there would

10   have to be some shared aspect of all this, in other

11   words there are going to be a lot of times when in

12   maybe not in the major urban areas but in a lot of the

13   country where we won't be needing all of that

14   spectrum, and certainly sharing that makes sense.

15   It is the fact that right now, if we don't

16   get the D block and have the ability to enter into

17   public partnerships with people to do that sharing,

18   then there needs to be a more sure mechanism as to how

19   we have access to the other spectrum to do that

20   sharing, and that doesn't seem to be, there isn't a

21   clear path for that at the moment, that's something

22   that really concerns us.

23   And then that leads to the comments that

24   Stagg made and Patrick made about the throughput. So

25   help me a little bit, because for those of us that are

1   not technically qualified as some of you, Stagg, you

2   say in your slides cell edge, the plan is that we

3   would get hopefully at least 256 kilobits per second

4   at cell edge, okay, and Patrick's talking about with 5

5   by 5 this is wonderful because we're going to be able

6   to get 30 megabits per second. Now, there's a hell of

7   a gap between 256 kilobits per second and 30 megabits

8   per second, and the question is, I guess to you,

9   Patrick, first is, with your vision of 30 megabits per

10   second, how far does it go when you get to the cell

11   edge? I mean how bad does it get?

12   MR. RINGQVIST: Yeah, I can address that.

13   So I think the important factor to look at is on an

14   average throughput. So yes, the 30 megabits is peak

15   and it's under ideal conditions, it's very rare that

16   you will get that. The average is what you will get

17   from an every user in the cell distributed with an

18   average would get. That is more relevant and that's

19   more what you design your networks for.

20   What I stated there is that 7 to 8 megabit

21   per second is what you would get as an average, seven

22   to eight. The cell edge is where you have the worst

23   conditions. And so what Stagg mentioned there was 256

24   I think it was, and that is consistent with the

25   modeling of LTE that we can achieve a 256 at cell

1   edge, so that is the worst performance.

2   MR. KNAPP: John, John wanted to -- yeah, go

3   ahead.

4   MR. QUAYLE: If I can just add to that, it's

5   easy to think of the cell edge in very simplistic

6   terms as being, you know, very geographically defined,

7   you know, the edge of the circle. But the cell edge

8   in LTE is really defined by the radio conditions that

9   a user is in. And you might have a major incident

10   which is geographically occurring at the cell edge and

11   you've got public safety users all around, say of a

12   very large burning building, each of those users is,

13   they're not all going to be at the cell edge in terms

14   of the radio channel conditions because a lot depends

15   on exactly where they are, whether they're, you know,

16   inside a vehicle and getting vehicle loss which puts

17   them at the cell edge, or if they're shadowed.

18   So even, you know, distributed across say 50

19   public safety first responders at the cell edge, only

20   probably a percentage of those, maybe 10, 20 percent,

21   will be at true cell edge radio conditions. So the

22   bottom line is the others will get higher throughput

23   than the bottom line of 256 kilobits.

24   MR. PEHA: I was going to say, well also

25   some of what we talk about 256 kilobits per second,

1   we're talking about per device, which is, you know,

2   just like -- and that's an uplink. So, you know, we

3   guarantee each of you a foot and a half by foot and a

4   half to sit on when you all come in here, that doesn't

5   mean that's all we have in the auditorium. But the

6   initial premise also, you talked about unused

7   spectrum, I think Dale is really referring to dynamic

8   use of spectrum.

9   If you look at how public safety systems

10   tend to use spectrum, and before coming to the FCC I

11   have, you know, over days, weeks, months, and minutes,

12   you find that particularly in western Pennsylvania,

13   you find that, you know, average usage looks very low

14   because utilization for very long periods of time is

15   very low, and then it spikes tremendously. So it's

16   really worrying only about, you know, the spike, and

17   actually 10 MHZ gives you an awful lot to spike into.

18   As Stagg was pointing out, 10 MHZ with the

19   kind of frequency use we're talking about is very

20   different than 10 MHZ with the old kind of systems.

21   And then as to whether we have other arrangements, I

22   mean that is what the priority roaming we've been

23   discussing is, and I think the technology easily

24   supports that as well.

25   MR. KNAPP: Allan, did you want to join in?

1   MR. SADOWSKI: Certainly, because of who I'm

2   working with I'm very sensitive to this, and so

3   something that I'm hoping to hear a little bit more

4   about myself is the overlap between these cell sites,

5   because I need to know that in a stress situation that

6   the people that I support in fact have the options of

7   going to other sites. And I'm hoping that the

8   technologies will support some directivity with the --

9   mentioned here, so that it gives them the option of

10   transferring to another site and supporting the

11   public. So, but I do see what's happening here, it's

12   really exciting for me knowing where I'm coming from

13   and the people I support today, they have nothing, a

14   lot of them. So this is really exciting to hear this

15   kind of discussion.

16   MR. LEGRANDE: I have one -- I hate to make

17   you stand there any longer.

18   MR. KNAPP: Go ahead, no, sure, sure.

19   MR. LEGRANDE: You know, there still seems

20   to be a focus on what we can do today versus what

21   we're going to be able to do tomorrow. And the thing

22   that kind of really is, well disturbing in a sense, is

23   that we know that the commercial industry, the

24   appetite for wireless data has grown, as my kids would

25   say, it's ridiculous, dad. They will use that word at

1   any time, trust me, and so I'll just use it here, but

2   it's been exponential, right?

3   Public safety has been throttled down, we've

4   been held back. There is a pent up demand right now.

5   We're going to take off the top of that, we're going

6   to give them a network, and this is the first thing

7   you're going to see, trust me, I've seen it before,

8   you're going to have use go out of the roof, the first

9   thing they're going to do is have a video setup for

10   everything, there will be inefficient use, I know

11   that.

12   But the presumption that we have enough and

13   our tools are going to be enough in this fair radical

14   peak that we think is going to be enough based on

15   current application use is not enough. We have to

16   assume that it's going to go in a direction -- these

17   are going to be the new superusers, they're going to

18   use this network more than our kids are using it

19   today, and we need to make that assumption, design for

20   that assumption, and apply that assumption in

21   everything we do, including of course, I hate to say

22   it, last time, spectrum allocation.

23   With regards to Dale's point that he made

24   earlier of unused inefficient use of the spectrum

25   throughout the country, well, you know, we're going to

1   have to go through a maturity model to get to

2   efficient use. I don't suggest we just go to

3   efficient use and demand that public safety fit in a

4   box. I think we migrate to an efficient use such to

5   make sure that they have enough when they need it.

6   Now, we may have ten incidents around the

7   country that results in, you know, an inability for

8   public safety to communicate, well those might be the

9   ten worst incidences that we would ever have to

10   respond to. So I would much rather make sure that

11   they have everything that we can give them now and

12   then throttle them back through technology, through

13   efficiencies, through spectrum sharing and

14   configurations, and mature to that point, not start at

15   that point.

16   So that's the difference that I see. I

17   definitely agree, I don't want unused inefficient use

18   of spectrum out there, but I also want to make sure

19   that we avoid that situation I just described. And

20   quite frankly I think that, you know, public safety

21   has already said that they're willing to, you know,

22   share their existing spectrum. So, you know, there

23   will be spectrum that will be available. So while,

24   you know, sure we won't be totally efficient with 700,

25   well we'll be freeing up spectrum, and that offset

1   should hopefully bring us to a place where everyone

2   can be happy.

3   MR. KNAPP: I'm going to -- okay, make it

4   quick so I can get to the last two questions and then

5   we can wrap up.

6   MR. RINGQVIST: Just to comment on the

7   rubber duck, I don't want to make a statement on

8   whether 10 MHZ or 20 MHZ is enough, but whatever you

9   have, I think it is important that public safety

10   understands that you need to manage what you have. So

11   a method for managing the bandwidth available, a

12   method for telling what service, which user is

13   important at this point in time, that is very

14   important. And that's more of an operational aspect

15   from a public safety point of view and how public

16   safety will use the mobile broadband network. The

17   technology is there to allow differentiation between

18   services and between users, and it's up to public

19   safety to define how to use that flexibility.

20   MR. KRESBIN: Hello. Keith Kresbin, AT&T,

21   and first if I may comment, we support the concept of

22   the D block by the way being allocated to public

23   safety, we think that's the right thing to do. Maybe

24   it's worthwhile to think about how an iPhone has

25   impacted data usage and traffic patterns in the United

1   States, and maybe that gives you some sense of what

2   Mr. LeGrande is thinking about when he talks about

3   pent up applications and data demand.

4   So with that comment aside, I do have a

5   question. There's been lots of discussion surrounding

6   the contention between public safety users and

7   commercial users for network access. But if we begin

8   with the Commission's understanding that there would

9   be a private radio access network dedicated to public

10   safety built using their 700 MHZ spectrum, doesn't it

11   sort of make that contention a moot fact? I mean if

12   public safety has its own radio access network, the

13   officers in the field, firefighters in the field, can

14   absolutely have access, and that can be guaranteed on

15   their own dedicated network. So it sort of sets aside

16   this idea, right, of competition between commercial

17   users and public safety users?

18   MR. KNAPP: Walter?

19   MR. JOHNSTON: I think this is a great

20   question to open up I think an important issue I'd

21   like actually the panel to discuss, which is, I know

22   that public safety has expressed concerns to us. We

23   have something called wireless priority service, and

24   it's been around for a number of years, and public

25   safety has had some good experiences, a few, and more

1   often than not they point to the cases where it's

2   failed. And I'd like some of the panelists to address

3   the priority mechanisms in LTE that would allow, when

4   it's required under policy, public safety access to

5   commercial spectrum in terms of what priority

6   mechanisms are in that would allow them and how that's

7   different from the current 2G technology that's

8   available today.

9   MR. RINGQVIST: So I mentioned in my opening

10   remarks that there is conversation ongoing in this

11   field on how next generation wireless products and

12   service would work on a network like LTE. So this is

13   a fairly complex topic that I don't think we have time

14   to go into too details. I mentioned that there is

15   work ongoing in the next generation Getz forum, they

16   have a draft specifications that they're working on

17   that is 400 pages long, which I will not go through

18   here. So, sufficient to say there is a lot of work, a

19   lot of energy being spent right now on how this should

20   work in an LTE environment. And the place to be is

21   the Getz forum and 3G PP, and I encourage anybody

22   who's interested to take part in those discussions

23   there.

24   MR. JOHNSTON: But I just want to make

25   clear, we've seen 2G systems fail in terms of priority

1   access. Do those same mechanisms exist in LTE?

2   MR. RINGQVIST: No, the mechanisms are very

3   different in LTE versus in 2G. So some of the key

4   things in 2G is that you have to request a circuit and

5   you have to do special dial codes. All those things

6   will change when you go to a package based systems

7   like LTE. There will be multiple ways you can get

8   access to a priority service. You can do the normal

9   way requesting a end to end session or dial code, or

10   you can do it through an application connection time,

11   or you can do it through in-core through some other

12   mechanism. There are a wide range of capabilities

13   being defined in these standards, as I mentioned.

14   MR. KNAPP: Let's take one more question.

15   Well, let's to the question and then I think we have

16   to move to wrap up.

17   MR. MURGON: Hi. Dick Murgon, APCO. There

18   was some discussion here touched briefly about future

19   spectrum for public safety, if the growth should, you

20   know, occur exponentially like we would expect. Has

21   there been any thought or can somebody maybe

22   articulate how that gets integrated into an existing

23   public safety network without having to forklift the

24   technology being bought for this broadband process and

25   being able to incorporate something into whether it's

1   500 MHZ or 30 gig, how that works?

2   MR. KNAPP: Well, why don't I take a stab at

3   that one. Of course it's always a concern when we add

4   an additional frequency band about how that's going to

5   integrate with existing equipment, and certainly one

6   of the things we don't want to do is exacerbate the

7   interoperability issues. But I will tell you, as part

8   of the Broadband Plan yesterday and having been here

9   at the Commission and dealing with spectrum

10   allocations a long time, I think it's probably one of

11   the most forward thinking approaches to spectrum

12   management that this agency has ever put forward,

13   including our working with the Federal government, the

14   NTIA, to look across the spectrum not only at the

15   bands that we had put on the table yesterday as

16   specific areas, but in a very deliberate process to

17   look at all of the spectrum for opportunities. And I

18   think there's nothing more important both on the

19   Federal side and for us than ensuring that as part of

20   that process public safety's requirements are taken

21   into account. And if as part of this it looks like

22   it's appropriate and there's a nice fit, I think what

23   we've been saying is that's very much part of the mix.

24   Stagg?

25   MR. NEWMAN: Let me just say, from a

1   technology standpoint, you know, I don't think it'll

2   have to be a total forklift in the future.

3   Transitions are always hard, but technology over time

4   is helping us more and more. For example LTE

5   envisions not having to have all the bandwidth

6   contiguous, in other words you could take five here

7   and ten here. Now, that's going to require changes,

8   but there are ways to use what you have and use

9   additional spectrum that may not be at all close.

10   IP Wireless already talked about some of the

11   improvements so that they can take in far more

12   bandwidth with a single, you know, set of devices than

13   you could in the past. So I think, you know, if we

14   look five, ten years out, a lot of these things, you

15   know, all the way to the future, software to find

16   radios et cetera et cetera, are going to make those

17   transitions better.

18   You know, the reality is it always takes --

19   I mean software to find radio and some of these

20   concepts go back ten, fifteen, twenty years, but

21   that's the reality is that's how long it takes to get

22   it to the market. But the good news is over the next

23   ten years we're going to bring to fruition a lot of

24   the research efforts that, you know, were on the table

25   when I was Chief Technologist more than a decade ago.

1   MR. LEGRANDE: I have one quick comment on

2   that.

3   MR. KNAPP: Sure.

4   MR. LEGRANDE: I think that my concern with

5   that is, one of the reasons why we chose LTE as public

6   safety is to try to get in the wake of the carriers,

7   right, and try to stay as closely as possible within

8   their commercial technology platform.   When we start

9   diversifying anything, I mean from frequencies to any

10   type of requirement, we have to make an assumption

11   that we're moving out of their wake, costs will

12   increase, and even the question of whether or not the

13   commercial device industry will support us will

14   actually become more difficult.   So while I don't

15   doubt, I mean we can always say that technology can do

16   it, technology can do it, but we have a business

17   aspect of our technology which is sometimes

18   prohibitive.   So, well, like I said before, you know,

19   would always welcome that as being an alternative, but

20   we still know what the best alternative is.

21   MR. KNAPP: All right, with that, I promised

22   a robust discussion and that's what we got.   And I

23   want to thank all our panelists because I thought

24   we've learned a lot today and it was very constructive

25   and we all share a goal of making sure that public

1   safety's needs are met. And, Admiral Barnett, if you

2   want to just wrap up the session?

3   MR. BARNETT: Juli, thank you for your

4   moderation of this robust discussion, and thank each

5   of you for being with us today. And a particular set

6   of thanks to our experts for this. I have a couple

7   comments, but let's applaud them now for their great

8   discussion.

9   (Applause.)

10   MR. BARNETT: So just a couple of

11   observations as a benediction here. I think what we

12   heard today from my standpoint was very significant,

13   number one, we heard these experts describe, you know,

14   how this network can work for public safety, very

15   significant. Number two I would say is they also

16   focused on some of the things that we need to address

17   next to make sure that that happens, also very

18   significant.

19   And then I would point out two things.

20   Although I appreciate all of the expertise here there

21   are two that I'll draw out. Number one, I really

22   appreciate Allan Sadowski focusing on what we really

23   need to focus on is it's the mission, we have to

24   accomplish the mission, we have to enable public

25   safety to accomplish the mission. And I also want to

1   point out and thank Robert LeGrande, also very

2   significant.

3   In essence what he did, this is a voice for

4   public safety saying, here is a way forward for us.

5   You know, let's take what we agree on and the good

6   parts of the network and let's build on those

7   including, and I really like his green part up there

8   is, we need to go after the funding to make sure that

9   this network becomes reality. So thanks to each of

10   you and thank you for those particular, those

11   significant aspects, and we appreciate your presence

12   here.

13   (Whereupon, at 11:37 a.m., the workshop in

14   the above-entitled matter was concluded.)

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REPORTER'S CERTIFICATE

DOCKET NO.:

CASE TITLE: *700 MHz Nationwide Interoperable Public Safety Wireless Broadband Network Workshop*

HEARING DATE: *3/17/10*

LOCATION: *WPC*

     I hereby certify that the proceedings and evidence are contained fully and accurately on the tapes and notes or digital recording reported by me at the hearing in the above case before *the Federal Communications Commission.*

Date: *3/17/10*

_____
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